

REMARKS

Reconsideration of this application as amended is respectfully requested.

The specification has been amended to conform more closely to conventional U.S. practice.

The abstract has been replaced by one which corresponds to conventional U.S. practice.

Claims 1-5 have been replaced by claims 6-16 which have been drafted in a manner more consistent with conventional U.S. practice.

The newly presented claims also have been drafted in such manner as to distinguish applicant's invention more clearly over the disclosure of Janes et al, all of claims 1-5 having been rejected as being anticipated by such reference. Applicant respectfully traversed the rejection based on Janes et al.

Figure 8 of Janes et al discloses the known construction which comprises a compression molded layup of layers, each such layer containing impregnated graphite fibres. Accordingly, Janes et al does not disclose any structure which corresponds to the core plate of applicant's construction. In some embodiments of applicant's invention the core plate comprises a sandwich wherein the low density core plate is interposed between a pair of fibre laminates. Janes et al clearly neither discloses nor suggests such a sandwich construction.

The only recess disclosed in Janes et al is the opening in one side of the guitar body through which air flows

into and out of such body. In applicant's construction, however, the recess in the core plate is closed on at least one side by a fibre laminate that is flush with the surface of the core plate, thereby reducing the vibrating mass of the soundboard.

Not only does Janes et al not disclose a core plate having at least one recess therein, at least one side of the recess being closed, but it also fails to disclose or even remotely suggest restricting the total volume of all recesses in the core plate to not more than about 80% of the total volume of such core plate. This is a characteristic of applicant's invention which has no counterpart at all in the reference.

Newly presented claim 6 recites a soundboard as comprising a low density core plate having two opposite faces and a fibre laminate overlying and adhered at least to one of such faces. The fibre laminate is recited as having elongate fibres embedded in a carrier. The core plate is recited as having at least one recess wholly within the confines of the core plate, all of such recesses having a total volume amounting to not more than about 80% of the total volume of such core plate. Claim 6, therefore, includes the characteristics of applicant's invention which distinguishes it over the disclosure of Janes et al. Claim 6, accordingly, is believed to be allowable.

Each of the remaining claims depends, ultimately, on claim 6 and, accordingly, distinguishes over the reference for the same reason given in support of the parent claim. The

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dependent claims distinguish over the parent claim and over one another by reciting certain characteristics of applicant's invention in more detail.

This application is believed to be in condition for allowance. Such action is requested.

The Office is authorized to charge or refund any fee deficiency or excess to Deposit Account No. 12-0755.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

the paragraph beginning at line 1 of page 1, has been amended as follows:

-- The invention relates to a soundboard of composite fibre material construction comprising at least one composite fibre laminate consisting of long fibres and carrier material, such soundboard being for use [for] in an acoustic musical instrument, particularly a bowed stringed instrument.

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The following heading has been inserted between lines 6 and 7 of page 1 as follows:

-- BACKGROUND OF THE INVENTION --.

The paragraph beginning at line 7 of page 1 has been amended as follows:

-- In recent years attempts have also been made to produce the soundboards of acoustic musical instruments in composite fibre material construction. Structures of composite fibre material construction generally consist of [long] elongate fibres which are preferably oriented in certain directions and a carrier or matrix material which is generally a thermosetting or thermoplastic plastics material. In the preferred embodiment of the invention this is an epoxy resin system.

The following heading has been inserted between lines 2 and 3 of page 2 as follows:

-- SUMMARY OF THE INVENTION --.

The paragraph beginning at line 7 of page 2 has been amended as follows:

-- Composite fibre sandwich structures are basically constructed in such a way that a core plate of low density is provided on both sides with composite fibre laminate layers. In this case the bending strength of the structure is heavily dependent upon the thickness of the core plate. Core plates of composite fibre sandwich constructions are frequently produced from hard foam materials. Balsa wood is used for the preferred embodiment of the invention. The fibre laminate can be produced by means of layered fibre structures, fibre meshes, hand lay-up laminated individual rovings or the like, as prepreg or by means of a suitable manufacturing process. Layered fibre structures in the form of prepgs are preferably used in the construction according to the invention. These are [- according to Claim 5 -] preferably single-layer and at the same time multidirectional. --

The paragraph beginning at line 23 of page 3 has been amended as follows:

-- [Advantageous embodiments of the invention are set out in the subordinate claims.] Some embodiments of the invention are explained in greater detail below with reference to the drawings. --

The following heading has been inserted before line 1 of page 4 as follows:

-- THE DRAWINGS --.

Insert the following heading between lines 5 and 6 of page 4 as follows:

-- DETAILED DESCRIPTION --.

The paragraph beginning at line 6 of page 4 has been

amended as follows:

-- According to the invention the core plate 1 has recesses 3 in the core plate material in at least one zone, but preferably in a plurality of zones at which the soundboard in the installed state is subjected to low bending stresses. These zones preferably lie in regions of strong antinodes of the soundboard, since there a reduction in the vibrating mass has a particularly positive effect in the sense of increasing the vibrating speed (velocity) and thus the sound radiation. In some areas of minimal static load the core plate recess 3 [preferably takes up] extends through the entire thickness of the core plate, as is shown in the embodiments in Figures 1a, 1e to 1i. As a result the fibre laminate 2 acts in these areas - apart from the desired mass reduction - in a similar manner, regarded dynamically, to a vibrating membrane, the area of which corresponds to the area of the recess. In this case, as can be seen in Figures 1e and 1f, the lower fibre laminate 2b is preferably connected via the edges of the recess 3k to the upper fibre laminate 2a. -

Rewrite the paragraph beginning at line 17 of page 4 as follows:

-- The fibre laminate 2 is preferably additionally coated with a thin layer 5, which can again preferably be a layer of solid wood. Figures 1f and 1g show these variants of Figures 1e and 1a. In addition to the visual benefits of this embodiment there is also the advantage that the solid wood layer 5 acts jointly with the fibre laminate 2 as a membrane in some variants, as shown in Figures 1f, 1g and 1i.

Rewrite the paragraph beginning at line 22 of page 4 and bridging page 5 as follows:

-- In those areas of the soundboard which are subjected to higher static stresses and in which therefore a reduction of the bending strength of the soundboard must be dispensed with, the core plate recesses 3 [- according to Claim 3 -] do not extend through the entire thickness D of the core plate but has a depth less than the core plate. This is shown in Figures 1b to 1d, and in this case [- according to Claim 3 -] the core plate is preferably made up of various layers 4. When the recess is positioned in the centre of the cross-section of the core plate 1 (Figure 1b) the core plate 1 is made up of three layers 4a to 4c, and when the recess is positioned on one side of the cross-section (Figures 1c and 1d) the core plate is made up of two layers 4a and 4b.

Rewrite the paragraph beginning at line 12 of page 5 as follows:

-- These extreme cases (of a recess volume which is greater than the volume of the core material) which are illustrated in Figures 1h and 1i are, however, preferably restricted to a few localised areas. Considered overall, the total volume of all recesses 3 [- according to Claim 3 -] amounting at most to 80%, preferably between 20 and 45% is markedly less than the total volume of the core plate filled with material (At 100% the total volume of all recesses would be identical to the total volume of the remaining core material).

Rewrite the paragraph beginning at line 18 of page 5

as follows:

For decoupling of the soundboard, for instance in the region of the edge, it is advantageous to reduce the thickness of the core plate. Therefore the core plate preferably has [according to Claim 4 -] a localised difference in thickness.